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Crossing the Bridge from Eighth to Tenth Grade: Can Ninth Grade Schools Make It Better?

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CHAPTER III

METHODOLOGY

This chapter provides in depth information on who the subjects of this study are and how they were selected, the method by which data were collected, descriptions of the data, instruments which were used, and how the data were applied and analyzed. There was a procedural method for conducting the study. This study compared ninth grade students enrolled in traditional ninth through twelfth grade schools with those attending ninth grade schools or academies.

Overview

This quantitative study was used to assess statistical differences between ninth grade schools or academies to traditional high schools containing grades nine through twelve. The study was devised to determine the effectiveness of ninth grade schools or academies based on academic achievement. Achievement was based on students' performance on the Algebra I and Biology I Subject Area Tests.

Participants

One group of participants in this study consisted of first-time ninth grade students who attend traditional high schools containing grades nine through 12. The second group consisted of first-time freshman students who are enrolled in ninth grade schools or academies. The participants were enrolled in Biology I and / or Algebra I and have taken the Subject Area Test for these courses. Ninth grade students from traditional high schools were randomly selected, for

validity of the test results, with ninth grade students from ninth grade schools or academies.

Six schools were used in this study. The ninth grade schools were selected from three regions, northern, central, and southern, of the state of Mississippi. The schools are classified as 5A, schools with an enrollment of 1,000 or more students in grades nine through twelve including the 10-12 high school enrollment. The traditional high schools identified in the study were selected from regions of Mississippi, north, central, and south. These schools are also classified as 5A and have comparable demographics to the identified ninth grade schools in the study. The identified schools tested a minimum of 75 students in Biology I and also in Algebra I using the Mississippi SATP (SATP). In order for students to be eligible for a high school diploma, Algebra I and Biology I subject area tests must be passed.

The ninth grade schools identified in this study are located in a separate building on a remote site from the 10-12 high school. Each school has at least 350 students enrolled. The faculty and staff consist of a principal, an assistant principal, counselor, library media specialist, and a full staff of teachers. Each school uses a form of block scheduling consisting of core academic and elective classes. Advanced Placement courses as well as special education programs are offered at the identified schools. All three ninth grade schools offer extracurricular activities including band, choir, clubs, and all high school sports.

The traditional high schools identified in this study contain grades nine through twelve, all within the same facility. Each school has at least 350 students

enrolled in ninth grade. The faculty and staff consist of a principal, three assistant principals, at least four counselors, a library media specialist, and a full staff of teachers. Each school uses a form of block scheduling consisting of core academic and elective classes. Advanced Placement courses, as well as special education programs, are offered at the identified schools. All three traditional high schools offer extracurricular activities including band, choir, clubs, and all high school sports. Ninth grade students are integrated into some academic and elective classes and extracurricular activities with tenth, eleventh, and twelfth grade students at these traditional high schools.

The Mississippi SATP is used to test ninth grade students taking Algebra I and/or Biology I at the end of the course. A committee of distinguished educators creates the Subject Area Test assessments. The process began with the selection of representative committees of exemplary teachers for each of the four subject areas (Algebra I, Biology I, English II, and U.S. History from 1877). Mississippi district superintendents were asked to nominate their most exemplary teacher(s) in each of these subjects, and nominees were then asked to detail accomplishments and experience. From this nominee pool, the Mississippi Department of Education selected members for each committee (approximately 30 teachers each) to maximize overall excellence as well as representation by congressional district, district accreditation level, and ethnic categories. Once selected, the teacher committees directly participated in all phases of test development. (p. 2)

The Algebra I test is described by the Mississippi Department of Education as follows:

The Algebra I Subject Area Test measures a student's knowledge of and skill level in applied algebra. The test consists of 65 multiple-choice items. Many multiple-choice items contain charts, graphs, or diagrams that the student will use to determine the correct answer. Questions from the following assessment strands are distributed throughout the test: Patterns, Relations, and Functions; Equations and Inequalities; Polynomials; Formulas in Problem Solving; Slope; and Probability. (www.mde.k12.ms.us)

The Biology I assessment is described by the Mississippi Department of Education as follows:

The Biology I Subject Area Test measures a student's knowledge of basic biological concepts, the use of science skills, and the application of biology to real-world problem solving and decision-making. Students will interpret data, apply concepts, draw conclusions, and explain their own ideas. The test consists of 89 multiple-choice items, which may include charts, diagrams, or graphs. Questions from the following assessment strands are distributed throughout the test: Chemical Basis of Life; The Cell; Genetics and the Molecular Basis of Heredity; Natural Selection and Diversity; Ecology; and Nature of Science. (www.mde.k12.ms.us)

Data Collection

Prior to data collection, application (Appendix A) and approval to conduct research was obtained from both the doctoral committee and the University of Southern Mississippi's Institutional Review Board (Appendix B). Data collection consisted of the following steps:

1. The six schools were contacted to identify the site test coordinator responsible for test data.
2. A letter describing the study was sent to school officials of six identified school districts in the state of Mississippi. The letter requested the following information:
 - Consent to use ninth grade student data from the 2004-2005 SATP
 - Ninth grade enrollment
 - Number of ninth grade students tested in Algebra I
 - Number of ninth grade students tested in Biology I
 - Scores from 2005-2006 Algebra I SATP for each tested ninth grade student (excluding names and identification numbers) with ethnicity and gender
 - Scores from 2005-2006 Biology I SATP for each tested ninth grade student (excluding names and identification numbers) with ethnicity and gender
3. The letter was mailed after approval from the Institutional Review Board was granted.
4. The letter requested a return date of two weeks after receipt of the letter.

Instrumentation

Student data from the SATP in Algebra I and Biology I was obtained from identified school districts. SATP Algebra I and Biology I test results were used to compare student achievement at ninth grade schools to that of ninth grade pupils at traditional high schools.

Four primary variables were identified in this study. The variables were the Algebra I Subject Area Test and the Biology I Subject Area Test. Other variables identified in this study included students' ethnicity and gender. The total number of 50 subjects for each SATP was used from each of the identified schools for a grand total of 300 to 400 subjects. These subjects were randomly selected from the data collected from the schools. All data were entered into the SPSS program.

Analysis of Data

An independent t-test was performed to determine if there is a statistically significant difference in achievement between students attending ninth grade schools and that of pupils enrolled in traditional high schools containing ninth through twelfth grades at the .05 alpha level. Specific techniques as related to testing each hypothesis were as follows:

H₁: There was a significant difference in Algebra I Subject Area Testing Program scores between freshman students who attend ninth grade academies and freshman students who attend traditional high schools.

H₂: There was a significant difference in Biology I Subject Area Testing Program scores between freshman students who attend ninth grade academies and freshman students who attend traditional high schools.

The data determined the effectiveness of ninth grade schools and academies. The results are discussed in Chapters IV (results) and V (conclusions) of this document.